

CURRICULUM VITAE

Name: Sadequr Rahman.

Date/Place of Birth: 7.9.57.

Nationality: Australian/Bangladeshi.

Academic Record

1979 B.A., University of Cambridge, UK. Major in Biochemistry.

1983 Ph.D., University of London, UK. Thesis entitled: "The synthesis of seed storage proteins in barley"

1983-85 MRC Post-doctoral fellow with Prof. Byron G. Lane, Department of Biochemistry, University of Toronto, Canada. Research focus The molecular characterisation of Germin.

Employment Record:

1986 Appointed Assistant Professor, Department of Biochemistry, University of Dhaka, Bangladesh. Research work was concerned with protein breakdown in germinating rice seeds and molecular analysis of *Shigella*., a common cause of gastro-intestinal disease in Bangladesh.

1988 Appointed Research Scientist, CSIRO Wheat Research Unit, North Ryde. Research area. Characterisation of grain softness protein.

1990 Appointed Senior Research Scientist.

1992 Transferred to Canberra to initiate work on starch biosynthesis.

1994 Department of Science, Industry and Trade fellowship to spend three months in Dr. Peter Shewry's laboratory to initiate immuno-screening of expression libraries.

2000 Science and Technology Fellowship, Japan to spend six weeks on transforming rice with wheat large insert clone for isoamylase in Dr. Yasunori Nakamura's laboratory.

2000 Japan Society for the Promotion of Science fellowship to spend eight weeks on detecting wheat genes in rice and wheat by fluorescent in situ hybridisation in Prof. Yasuhiko Mukai's laboratory.

2000 Appointed Principal Research Scientist and Sub-Program Leader, supervising about 20 staff.

Invited Speaker at National and International Symposia (1985 -):

1998 4th Asia Pacific Conference on Agricultural Biotechnology. Darwin. Chairman of session on Starch.

1998 9th NIAR/COE International Symposium. Tokyo. 'Frontier Research of Plant Genome Functions. 'The structure of genes involved in starch biosynthesis in wheat.'

2001 American Association of Cereal Chemists. (Could not attend).

2002. Combio Conference, Sydney.

PUBLICATIONS LIST
S.RAHMAN

REFEREED.

1. Rahman, S., Shewry, P.R. and Miflin, B.J. 1982.
Differential protein accumulation during barley grain development.
J.Exp.Bot. 33, 717-728.
2. Kreis, M., Rahman, S., Forde, B.G., Shewry, P.R. and Miflin, B.J. 1983.
Sub-families of hordein mRNA encoded at the Hor-2 locus of barley.
Mol.Gen.Genet. 191, 194-200.
3. Kreis, M., Shewry, P.R., Forde, B.G., Rahman, S. and Miflin, B.J. 1983.
Molecular analysis of a mutation conferring the high-lysine phenotype in developing grain of barley.
Cell 34, 161-167.
4. Rahman, S., Kreis, M., Forde, B.G., Shewry, P.R. and Miflin, B.J. 1983
Nutritional control of storage protein synthesis in developing grain of barley.
Planta 159, 366-372.
5. Miflin, B.J., Rahman, S., Kreis, M., Forde, B.G., Blanco, L. and Shewry, P. 1983.
The hordeins of barley: a developmentally and nutritionally regulated multigene family of storage proteins.
In Proceedings of NATO/FEBS workshop on structure and function of plant genomes. pp 36-45.
6. Kreis, M., Shewry, P.R., Forde, B.G., Rahman, S., Bahramian, M.B. and Miflin, B.J. 1984.
Molecular analysis of the effects of the lys 3a gene on the expression of Hor loci in developing endosperms of barley (*Hordeum vulgare* L.)
Biochem. Genet. 22, 231-255.
7. Miflin, B.J., Forde, B.G., Kreis, M., Rahman, S., Forde, J., and Shewry P.R.
Molecular biology of the grain storage proteins of *Triticeae*. 1984.
Phil. Trans. R. Soc. B. 304, 333-339.
8. Rahman, S., Kreis, M., Forde, B.G., Shewry, P.R. and Miflin, B.J. 1984.
Hordein expression during development of the barley (*Hordeum vulgare*) endosperm.
Biochem. J. 223, 315-322.
9. Shewry, P.R., Forde, B.G., Kreis, M., Rahman, S. and Miflin, B.J. 1984.
The structure and expression of barley storage protein genes.
Kulturpflanze 32, 61-70
10. Kreis, M., Shewry, P.R., Forde, B.G., Rahman, S., and Miflin, B.J. 1985.
Molecular evolution of the seed storage proteins of barley, rye and wheat.
J. Mol. Biol. 183, 499-502.
11. Grzelczak, Z., Rahman, S., Kennedy, T.D. and Lane B.G. 1985.

Compartmentation of germin, its translatable mRNA and its biosynthesis among the roots, stems and leaves of wheat seedlings.
Can. J. Biochem. 63, 317-327.

12. Rahman, S., Grzelczak, Z., Kennedy, T.D. and Lane B.G. 1988.
Germin. Molecular cloning of cDNA that selects germin from bulk wheat mRNA.
Biochem. Cell. Biol. (formerly *Can. J. Biochem.*). 66, 100-106.
13. Gomez, P.F. and Rahman, S. 1989.
Inhibition of protein breakdown during germination of rice seedlings under saline conditions.
The Dhaka University Studies, Part E, 4, 153-155.
14. Dratewka-Kos, E., Rahman, S., Grzelczak, Z.F., Kennedy, T.D., Murray, R.K. and Lane B.G. 1989.
Polypeptide structure of germin as deduced from cDNA sequencing.
J. Biol. Chem. 264, 4896-5000.
15. Monsur, K.A., Begum, Y.A., Ahmed, Z.U. and Rahman, S. 1989.
Evidence of multiple infections in cases of diarrhoea due to enterotoxigenic *Escherichia coli*.
J. Infect. Dis 159, 144-145.
16. Jolly, C.J., Rahman, S., Kortt, A.A. and Higgins, T.J.V. 1993.
Characterisation of the wheat Mr 15000 'grain softness protein' and analysis of the relationship between its accumulation in the whole seed and grain softness
Theoret. Appl. Genet. 86: 589-597
17. Rahman, S., Jolly, C.J., Skeritt, J.H. and Walloschek, A. 1994.
Cloning of a wheat 15-kDa grain softness protein (GSP): GSP is a mixture of puroindoline-like polypeptides
Eur. J. Biochem. 223: 917-925
18. Morell, M.K., Rahman, S., Abrahams, S.L. and Appels, R. 1995.
The biochemistry and molecular biology of starch synthesis in cereals
Aust. J. Plant Physiol. 22: 647-660
19. Rahman, S., Kosar-Hashemi, B., Samuel, M.S., Hill, A., Abbott, D.C., Skeritt, J.H., Preiss, J., Appels, R and Morrell, M.K. 1995.
The major proteins of wheat endosperm starch granules
Aust. J. of Plant Physiol. 22: 793-803
20. Jolly, C.J., Glenn, G.M. and Rahman, S. 1996.
GSP-1 genes are linked to the grain hardness locus (Ha) on wheat chromosome 5D
Proc. Natl. Acad. Sci. USA. 93, 2408-2413.
21. Rahman, S., Abrahams, S., Abbott, D., Mukai, Y., Samuel, M., Morell, M. and Appels, R. 1997.
A complex arrangement of genes at a starch branching enzyme I locus in the D-genome donor of wheat

22. Graybosch, R.A., Peterson, C.J., Hansen, L.E., Rahman, S., Hill, A. and Skerriitt, J.H. 1998. Identification and characterization of U.S. wheats carrying null alleles at the *wx* loci *Cereal Chemistry* 75: 162-165.
23. Rahman, S., Li, Z., Abrahams, S., Abbott, D., Appels, R. and Morell, M.K. Characterisation of a gene encoding wheat endosperm of starch branching enzyme-I. 1999. *Theoret Appl Genet* 98,156-163
24. Li, Z., Rahman, S., Appels, R. and Morell, M. 1999. Cloning and characterization of a gene encoding wheat soluble starch synthase *Theoret Appl Genet* 98, 1208-1216.
25. Li, Z., Chu, X., Mouille, G., Yan, L., Kosar-Hashemi, B., Hey, S., Napier, J., Shewry, P., Clarke, B., Appels, R., Morell, M. and Rahman, S. 1999. The localization, expression and role of the class II starch synthases of wheat *Plant Physiol.* 120, 1147-1156.
26. Turner, M., Mukai, Y., Leroy, P., Charef, B., Appels, R. and Rahman, S. 1999. The *Ha* locus of wheat: identification of a polymorphic region for tracing grain hardness in crosses. *Genome.* 42, 1242-1250
27. Turnbull, K.M., Gaborit, T., Marion, D. and Rahman, S. 2000 The *Ha* locus of wheat: variation in puroindoline polypeptides in Australian cultivars. *Aust. J. Plant. Physiol.* 27 (2), 153-158
28. Rahman, S., Li, Z., Batey, I., Cochrane, M.P., Appels, R. and Morell, M. 2000. Genetic alteration of starch functionality in wheat. *J. Cereal Sci.* 31, 91-110
29. Yan, L., Bhavé, M., Fairclough, R., Konik, C., Rahman, S. and Appels, R. 2000. The genes encoding granule-bound starch synthase (GBSS) from the A, B and D progenitors of common wheat *Genome*, 43(2), 264-272.
30. Li Z., Mouille G., Kosar-Hashemi B., Rahman S., Clarke B., Appels R. and Morell M. 2000 The structure and expression of the wheat starch synthase III gene: motifs in the expressed gene define the lineage of the starch synthase III gene family. *Plant Physiology* 123, 613-624.
31. Konik-Rose, CM, Moss, R., Rahman, S. Appels, R., Stoddard, F, McMaster G. (2001). Evaluation of the 40 mg swelling test for measuring starch functionality.. *Starch-Starke*, 53, 14-20.
32. Fukui KN, Suzuki G., Lagudah E., Rahman S., Appels R., Yamamoto M., Mukai Y. (2001). Physical arrangement of retrotransposon-related repeats in centromeric regions of wheat.

Plant Cell Physiol. 42 (2) 189-196.

33. Rahman S., Regina A., Li Z., Mukai Y., Yamamoto M., Kosar-Hashemi B, Abrahams S, Morell M. (2001). Comparison of starch branching enzymes genes reveals evolutionary relationships among isoforms: characterisation of a gene for starch branching enzymes IIa from the wheat D genome donor *Aegilops tauschii*. *Plant Physiol* 125, 1314-1324.
34. Osborne, B, Turnbull K, Anderssen B, Rahman S, Appels, R (2001). The hardness locus in Australian wheat lines. *Aust. J. Agric. Res.* 52(12), 1275-1286.
35. Morell, M., Rahman S, Regina, A, Rudi Appels and Zhongyi Li (2001). Wheat starch biosynthesis. *Euphytica* 119: 55-58.
36. Turnbull, K-M, Rahman, S. (2002) Endosperm texture in wheat *J. Cereal Science.* 36, 327-337
37. Aoki, N., Whitfield, P., Hoeren F., Scofield, G., Newell, K., Patrick, J., Offler, C., Clarke, B., Rahman, S., Furbank, R.T. Three sucrose transporter genes are expressed in the developing grain of hexaploid wheat. *Plant Molecular Biology* 50, 453-462
38. Turnbull, KM, Marion D, Gaborit T., Appels, R., Rahman S. (2002). Temporal expression of puroindolines and grain hardness in the developing wheat endosperm. *Planta* 216, 699-706
39. Turnbull, K-M, Turner M, Mukai, Y, Yamamoto, M, Morell, MK, Appels, R, Rahman, S. (2003) The organisation of genes tightly linked to the Ha locus in *Aegilops Tauschii*, the D genome donor to wheat . *Genome* 46, 330-338
40. Rahman, S, Nakamura, Y , Li, Z, Clarke, B, Fujita, N, Mukai, Y, Yamamoto, M, Regina, A , Tan, Z, Kawasaki, S, Morell, M . (2003) Genes for isoamylase in plants: characterization of the sugary type-gene from rice and *A.tauschii*. *Genome* 46, 496-506
41. Morell, M, Kosar-Hashemi, B, Samuel, M, Chandler, P, Rahman, S, Buelon, A, Batey, I, Li, Z. (2003) Identification of the molecular basis of mutations at the barley *sex6* locus and their novel starch phenotype. *Plant Journal* 34, 172-184.
42. Suzuki, G , Moriyama, M, Fujioka, K , Yamamoto, M , Subramanyam, NC, Li, Z, Appels, R, Morell, M, Mukai, Y, Rahman, S. (2003) The starch branching enzyme I locus from *Aegilops tauschii*, the donor of the D genome to wheat. *Functional and Integrative Genomics* 3, 69-75.
43. Li, Z., Sun, F, Xu, S, Chu, X, Mukai, Y, Yamamoto, M, Ali, S, Rampling, L, Kosar-Hashemi, B, Rahman, S, Morell, MK (2003). The structural organisation of the genes encoding class II starch synthase of wheat and barley and the evolution of the genes encoding starch synthases in plants. *Functional and Integrative Genomics* 3, 76-85.

44. Morell, M, Regina, A, Li, Z, Kosar-Hashemi, B, Rahman, S. (2003). Advances in the understanding of starch synthesis in wheat and barley. *J. Appl. Glycoscience* (in press).

UNREFEREED.

1. Shewry, P.R., Kreis, M., Rahman, S., Burgess, S.R., Tardini, L., Bradberry D., Franklin, J., Fry, R., and Miflin, B.J. 1984. The secalins of rye; chemistry, genetics, synthesis, deposition and molecular cloning. *Kulturpflanzen*
2. Jolly, C.J., Rahman, S., and Higgins, T.J. 1990. A protein marker for softness in bread wheats. *Proceedings of the 6th Wheat Breeding Society of Australia*. (Tamworth. Eds. L.O'Brien, F.W. Ellison, R.A. Hare, and M.C. Mackay) pp 407-409.
3. Rahman, S., Jolly, C.J. and Higgins, T.J. 1991. The chemistry of wheat-grain hardness. *Chemistry in Australia* September: p.397.
4. Rahman, S., Jolly, C.J., Kortt, A.A., Walloscheck, A. and Higgins, T.J. (1991). Molecular characterisation of grain softness protein. In *Cereals International*. (Melbourne. Eds. D.Martin and C.W. Wrigley) pp 288-289.
5. Turner, M., Rahman, S., Sharp, P. and Appels, R. (1993). The grain softness protein I locus in *Triticum tauschii*. *Proceedings of the 43rd Australian Cereal Chemistry Conference*. (Sydney. Ed C.W. Wrigley) pp 330-331.
6. Rahman, S., Hogie, L., and Appels, R. (1993). Molecular analysis of starch synthesis in *Triticum tauschii*. *Proceedings of the 43rd Australian Cereal Chemistry Conference*. (Sydney. Ed C.W. Wrigley) pp 332-333.
7. Rahman, S. 1994. Genetic manipulation of starch properties in wheat. *Chemistry in Australia* September: pp. 517-518.
8. Morell, M.K., Kosar-Hashemi, B., Rahman, S., Abrahams, S.L., Abbott, D.C. and Appels, R., (1995). Starch branching enzymes in developing wheat endosperm. *Proceedings of the 45th Australian Cereal Chemistry Conference*. (Eds Williams, Y.A. and Wrigley C.W.) pp 135-139.
9. Rahman S., Kosar-Hashemi, B., Samuel, M.S., Abbott, D.C., Hill, A., Skerritt, J.H., Appels, R., and Morell, M. (1995). The major proteins of wheat starch granules. *Proceedings of the 45th Australian Cereal Chemistry Conference*. (Eds Williams Y.A. and Wrigley, C.W.) pp 133-134.
10. Morell, M., Appels, R., Rahman, S., Abrahams, S., Kosar-Hashemi, B., O'Shea, M., Samuel, M., Li, Z., Tamas, L., Bekes, F. 1996. Report to Industry No 1 (Groupe Limagrain, Goodman-Fiedler). *Fundamentals of Wheat Starch and Protein Research Agreement*.
11. Batey I, Curtin B, Abbott D & Rahman S. 1996. Starch granule size distribution of Chinese Spring chromosome deletion lines. In: *Cereals '96*, C.W. Wrigley(ed), *Proceedings 46th Australian Cereal Chemistry Conference* (Sydney: September 1-6, 1996) pp. 228-230.
12. Rahman S, Abrahams S, Abbott D, Mukai Y, Samuel M, Morell M & Appels R. 1996. A complex arrangement of genes at a starch branching enzyme-I locus in the D-genome donor

of wheat. In: Cereals '96, C.W. Wrigley(ed), Proceedings 46th Australian Cereal Chemistry Conference (Sydney:September 1-6, 1996) pp 231-233.

13. Konik C., Rahman S, Abbott D. and Appels R. 1996. Restriction enzyme mapping of the granule bound starch synthase gene. pp 234-236. In: Cereals '96, C.W. Wrigley(ed), Proceedings 46th Australian Cereal Chemistry Conference (Sydney:September 1-6, 1996) pp 267-269.
14. Morell, M., Appels, R., Rahman, S., Abrahams, S., Kosar-Hashemi, B., O'Shea, M., Samuel, M., Li, Z., Tamas, L., Bekes, F. 1996. Report to Industry No 2 (Groupe Limagrain, Goodman-Fiedler). Fundamentals of Wheat Starch and Protein Research Agreement.
15. Morell, M., Appels, R., Rahman, S., Abrahams, S., Kosar-Hashemi, B., O'Shea, M., Samuel, M., Li, Z., Tamas, L., Bekes, F. 1996. Report to Industry No 3 (Groupe Limagrain, Goodman-Fiedler). Fundamentals of Wheat Starch and Protein Research Agreement.
16. Li, Z., Brettel R., Rahman, S., Murray, F., Abbott, D.C., Appels, R. and Morell, M.K. 1997. Advances in wheat genetic engineering—increased transformation efficiencies and the first field release. Proceedings of the 47th Australian Cereal Chemistry Conference. (Ed A.W. Tarr, A.S. Ross and C.W. Wrigley). pp 22-26.
17. Rahman, S., Li, Z., Mukai, Y., Abrahams, S., Abbott, D.C., Morell, M.K. and Appels, R. 1997. Structure of starch branching enzyme genes from *T. tauschii*. Proceedings of the 47th Cereal Chemistry Conference. . (Ed A.W. Tarr, A.S. Ross and C.W. Wrigley). pp 360-364.
18. Morell, M., Appels, R., Rahman, S., Abrahams, S., Kosar-Hashemi, B., O'Shea, M., Samuel, M., Tamas, L., Tamas, C., Bekes, F. 1997. Report to Industry No 4 (Groupe Limagrain, Goodman-Fiedler). Fundamentals of Wheat Starch and Protein Research Agreement.
19. Morell, M., Appels, R., Rahman, S., Abrahams, S., Kosar-Hashemi, B., O'Shea, M., Samuel, M., Li, Z., Tamas, L., Tamas, C., Bekes, F. 1998. Report to Industry No 5 (Groupe Limagrain, Goodman-Fiedler). Fundamentals of Wheat Starch and Protein Research Agreement.
20. Rahman S, Li Z., Mukai Y., Abbott D., Abrahams S., Kosar-Hashemi B., Samuels M., Appels R. and Morell M. Structure of branching enzyme genes in wheat. Proc. 4th Asia-Pacific Conference on Agricultural Biotechnology, Darwin. 1998. Pp 388-390.
21. Morell, M., Appels, R., Rahman, S., Li, Z., Kosar-Hashemi, B., Samuel, M., Tamas, L., Tamas, C., Bekes, F. 1998. Report to Industry No 6 (Groupe Limagrain, Goodman-Fiedler). Fundamentals of Wheat Starch and Protein Research Agreement.
22. Clarke B.C., Taylor B., Morell, M., Li Z., Rahman S., Ali S. and Appels R. 1998. Gene expression in wheat: The quality genes in grain endosperm. Proc. 9th International Wheat Genetics Symposium. Ed A.E. Slinkard. University of Saskatchewan Press. Pp 65-80.
23. Mukai Y., Rahman S., Yamamoto M., Okamoto M., Turner M., Li Z., Morell M. and Appels R. 1998. Physical mapping of genes controlling wheat grain quality by fluorescence in situ hybridisation. Proc. 9th International Wheat Genetics Symposium. Ed A.E. Slinkard.

University of Saskatchewan Press. Pp 218-221. Li, Z., Rahman, S., Appels, R. and Morell, M.K. (1998). Cloning and characterisation of a gene encoding wheat soluble starch synthase I. Proceedings of the 48th Australian Cereal Chemistry Conference (Cairns. Ed L. O'Brien, A.B. Blakeney, A.S. Ross, C.W. Wrigley) Pp 30-34.

24. Rahman, S. Li, Z., Mouille, G., Mukai, Y., Appels, R., Morell, M.K. (1998). The structure of genes involved in starch biosynthesis in wheat. Proceedings of the 9th NIAR/COE International Symposium, Tokyo. Pp 1-2.
25. Morell, M., Appels, R., Rahman, S., Li, Z., Kosar-Hashemi, B., Samuel, M., Tamas, L., Tamas, C., Bekes, F. 1998. Report to Industry No 7 (Groupe Limagrain, Goodman-Fiedler). Fundamentals of Wheat Starch and Protein Research Agreement.
26. Morell, M., Appels, R., Bekes, F., Li, Z., Karunasekara, Y., Kosar-Hashemi, B., Mouille, G., Patil, R., Preston, L., Rahman, S., Solomon, R., Stiller, D., Xu, S. 1999. Report to Industry No 8 (Groupe Limagrain, Goodman-Fiedler). Fundamentals of Wheat Starch and Protein Research Agreement.
27. Li, Z., Chu, X., Mouille, G., Yan, L., Kosar-Hashemi, B., Clarke, B.C., Appels, R., Morell, M.K. and Rahman, S. (1999). Starch synthases and their genes from wheat. Proceedings of the 49th Australian Cereal Chemistry Conference (Melbourne, Eds J.F. Panozzo, M. Ratcliffe, M. Wootton and C.W. Wrigley) Pp 114-116.
28. Turnbull, K.M., Moullet, O., Appels, R., Morell, M. and Rahman, S. (1999). Cloning and characterisation of genes from the hardness locus of wheat. Proceedings of the 49th Australian Cereal Chemistry Conference. (Melbourne, Eds J.F. Panozzo, M. Ratcliffe, M. Wootton and C.W. Wrigley). Pp 325-328.
29. Morell, M., Appels, R., Rahman, S., Li, Z., Bekes, F., Solomon, R., Ahmed, R. 2000. Report to Industry. (Biogemma, Goodman-Fielder) No 1. Wheat Starch and Protein Research Program.
30. Morell, M., Rahman, S., Li, Z., Ahmed, R., Kosar-Hashemi, B., Bekes, F., Appels, R., Solomon, R., Konik, C. Report to Industry (Biogemma, Goodman-Fielder) 2000. No2. Wheat Starch and Protein Research Program.